U.S. DEPARTMENT OF COMMERCE • National Oceanic and Atmospheric Administration

SEVERE LOCAL STORM
WARNING SERVICE
AND TORNADO STATISTICS, 1953-1973

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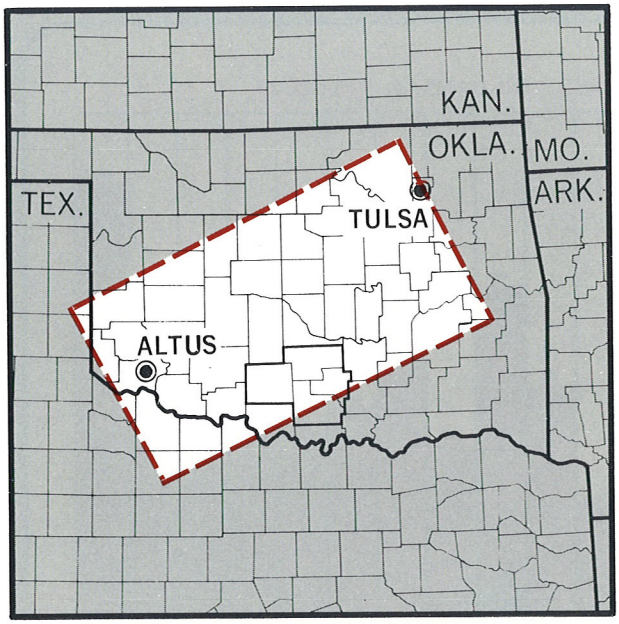
Severe Local Storm Warning Service

Severe local storms are tornadoes and thunderstorms which are accompanied by high winds, hail, and heavy rains. These storms are small and short-lived weather phenomena which are the most difficult weather features to forecast precisely, given our present knowledge, theory, equipment, and techniques. Although it is not possible to predict exactly where and when severe thunderstorms and tornadoes will occur, it is possible to predict general areas where the probability of severe thunderstorms and tornado development is greatest by detecting the larger-scale events which are usually associated with such storms.

This important forecasting function is performed by the National Severe Storms Forecast Center in Kansas City, Missouri. This facility is operated by the National Weather Service, a major element of NOAA, the National Oceanic and Atmospheric Administration of the U.S. Department of Commerce.

Meteorologists at Kansas City monitor conditions in the North American atmosphere, using surface data from hundreds of points and radar summaries, satellite photographs, meteorological upper-air profiles (obtained by sounding balloons) and reports from pilots. From these thousands of pieces of information, weathermen determine the area that is most likely to experience severe thunderstorms or tornadoes. Information on this area is then issued to National Weather Service offices and the public in the form of a watch bulletin.

A severe thunderstorm watch or tornado watch bulletin usually identifies an area about 140 miles wide by 200 miles long.

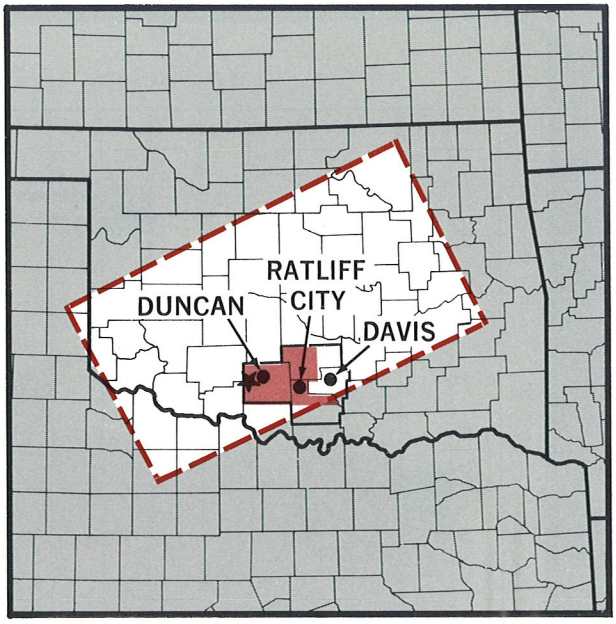


NATIONAL WEATHER SERVICE TORNADO WATCH BULLETIN
ISSUED 2:35 PM CST APRIL 19, 1972

MOST OF SOUTHWEST AND CENTRAL OKLAHOMA AND A PORTION OF NORTH CENTRAL TEXAS

THE THREAT OF TORNADOES WILL EXIST IN THESE AREAS FROM 3:30 PM UNTIL 9:30 PM CST THIS WEDNESDAY AFTERNOON AND EVENING. SCATTERED SEVERE THUNDERSTORMS WITH LARGE HAIL AND LOCALLY DAMAGING WINDS ARE ALSO FORECAST. THE GREATEST THREAT OF TORNADOES AND SEVERE THUNDERSTORMS IS IN AN AREA ALONG AND SEVENTY MILES EITHER SIDE OF A LINE FROM THIRTY MILES SOUTHWEST OF ALTUS, OKLAHOMA TO THIRTY MILES SOUTH SOUTHEAST OF TULSA, OKLAHOMA.

PERSONS IN OR CLOSE TO THE TORNADO WATCH AREA ARE ADVISED TO BE ON THE WATCH FOR LOCAL WEATHER DEVELOPMENTS AND FOR LATER STATEMENTS AND WARNINGS.



TORNADO WARNING BULLETIN
NATIONAL WEATHER SERVICE OKLAHOMA CITY OKLAHOMA
ISSUED 3:50 PM CST APRIL 19, 1972

A TORNADO WARNING IS IN EFFECT UNTIL 4:50 PM CST FOR PERSONS IN STEPHENS, NORTHERN CARTER AND WESTERN GARVIN COUNTIES IN OKLAHOMA.

A TORNADO WAS INDICATED BY RADAR 6 MILES SOUTHWEST OF DUNCAN OKLAHOMA AT 3:50 PM CST AND IS MOVING TOWARD THE EAST NORTHEAST AT 40 MPH.

IF THREATENING CONDITIONS ARE SIGHTED, BE PREPARED TO MOVE TO A PLACE OF SAFETY.

Although the watch bulletin states approximately where and for how long the severe local storm threat will exist, it does not mean that severe local storms will not occur outside the watch area or time frame. **The watch is only an indication of where and when the probabilities are highest.** Persons within 75 miles of the watch area should also be on the alert for threatening conditions.

The watch bulletins are transmitted to all National Weather Service offices. Designated offices prepare and issue a redefining statement which specifies the affected area in terms of counties, towns, and locally well-known geographic landmarks. These messages are disseminated to the public by all possible means, and are used to guide the activities of local government, law enforcement agencies, severe local storm reporting networks, and emergency agencies in preparing for severe weather.

Watches are not warnings. Until a severe thunderstorm or tornado warning is issued, persons in and near watch areas should maintain their normal routines, but watch for threatening weather and listen to radio or television for further severe weather information.

A severe thunderstorm warning or tornado warning bulletin is issued by a local office of the National Weather Service when a severe thunderstorm or tornado has actually been sighted in the area or

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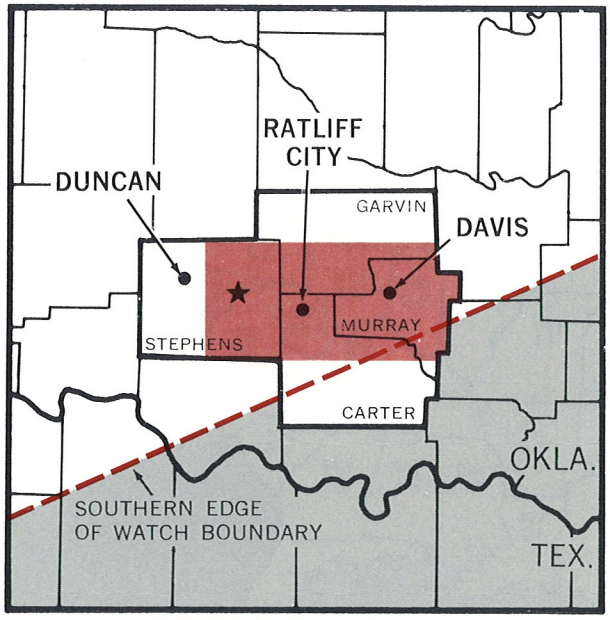
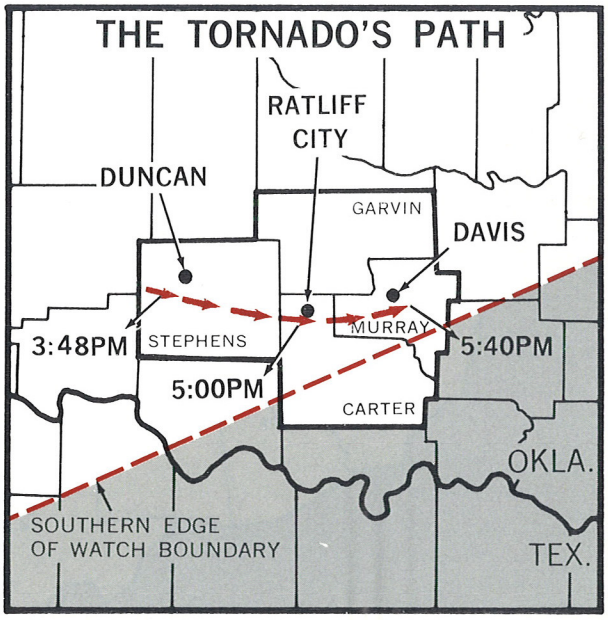


TORNADO WARNING BULLETIN
NATIONAL WEATHER SERVICE OKLAHOMA CITY
OKLAHOMA
ISSUED 4:40 PM CST APRIL 19, 1972

A TORNADO WARNING IS IN EFFECT UNTIL 5:50 PM CST FOR PERSONS IN EASTERN STEPHENS, SOUTHERN GARVIN, NORTHERN CARTER AND MURRAY COUNTIES IN OKLAHOMA.

A TORNADO WAS INDICATED BY RADAR 15 MILES EAST SOUTHEAST OF DUNCAN OKLAHOMA AT 4:30 PM CST AND IS MOVING TOWARD THE EAST AT 30 MPH.

IF THREATENING CONDITIONS ARE SIGHTED, BE PREPARED TO MOVE TO A PLACE OF SAFETY.



KEY

- WATCH BOUNDARY
- WARNING AREA
- TORNADO'S PATH
- WATCH REFERENCE POINT
- TORNADO

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indicated by radar. Warnings describe the "downstream" area that could be affected. This area is determined from the location, size, direction (which can be erratic) and speed of movement of the severe thunderstorm or tornado. Since tornadoes are not always indicated by radar or observed by severe storm spotters, **a warning may not always be given** and persons should be on the alert to the possibility of such storms whenever threatening conditions are nearby.

When a warning is received, persons close to the storm should take cover immediately, especially in the case of tornado warning. Persons farther away from the storm should be prepared to take cover if threatening conditions are sighted. Even though a mobile home is tied down, persons living in such homes should seek safe shelter when a tornado or severe thunderstorm warning has been issued and threatening conditions are approaching.

Severe weather statements are prepared by local offices of the National Weather Service to keep the public fully informed of all current information, particularly when *watch* or *warning* bulletins are in effect. Statements are issued at least once each hour, and more frequently when the severe weather situation is changing rapidly. In this way, a close watch is kept on weather developments, and information is quickly disseminated to the counties for which the National Weather Service office has responsibility.

All-clear bulletins are issued whenever the threat of severe thunderstorms or tornadoes has ended in the area previously warned in a tornado or a severe thunderstorm *warning* bulletin. When a *warning* is cancelled, but a *watch* continues in effect for the same or adjacent area or a *warning* is in effect for an adjacent area, a "Severe Weather Bulletin" is issued; this qualified message is also issued when the *watch* is cancelled for a portion, but not all of the *watch* area. This permits a continuous alert in the path of the storm, with the alert being cancelled as the severe weather moves through the *watch* area.

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sas City monitor American atmos- a from hundreds nmaries, satellite cal upper-air pro- ng balloons) and these thousands eathermen deter- t likely to experi- ms or tornadoes. is then issued to e offices and the atch bulletin.

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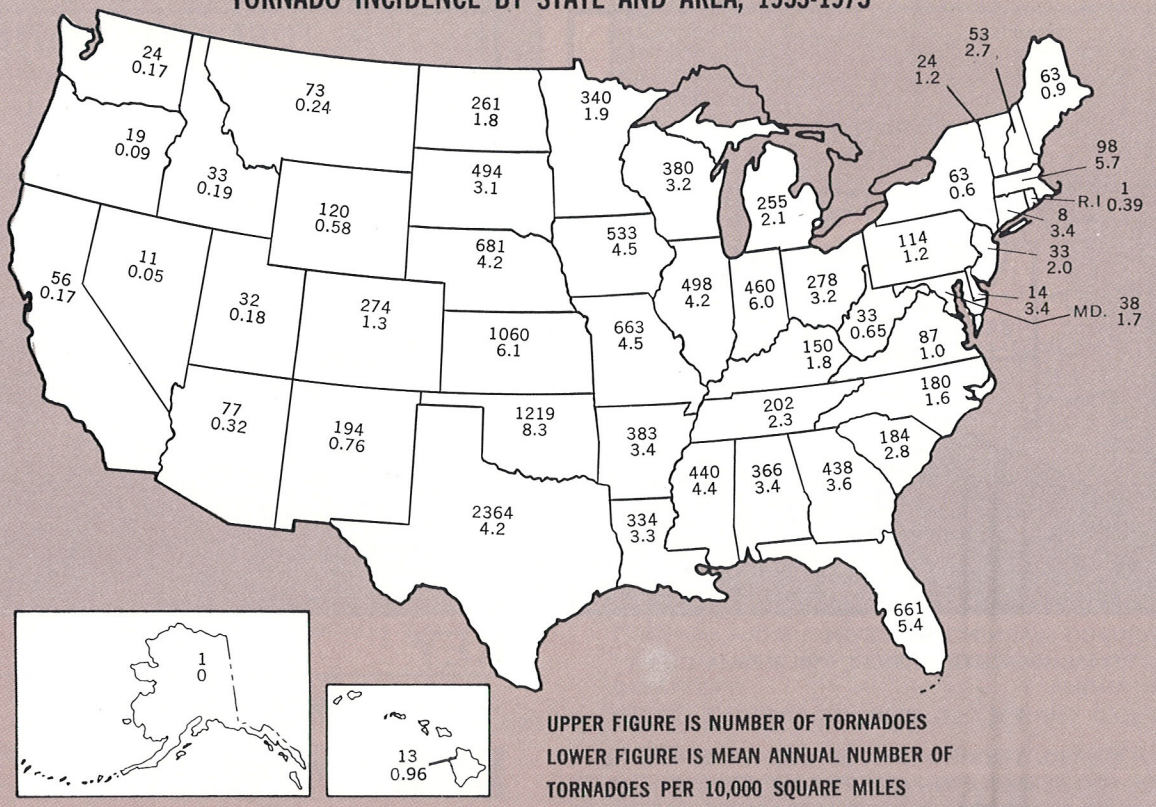
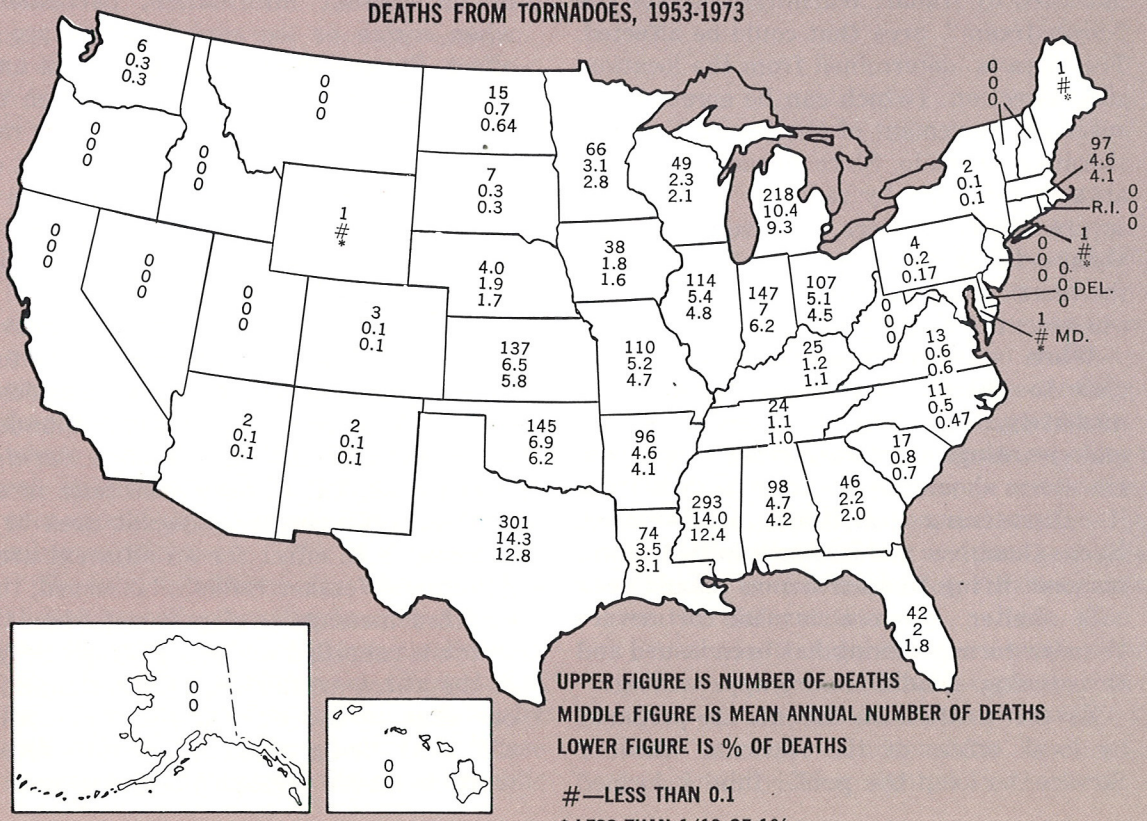
TORNADO INCIDENCE BY STATE AND AREA, 1953-1973



UPPER FIGURE IS NUMBER OF TORNADOES
LOWER FIGURE IS MEAN ANNUAL NUMBER OF TORNADOES PER 10,000 SQUARE MILES

The greatest potential for casualties from tornadoes is not necessarily where the greatest number of tornadoes occur, but where there is a combination of high tornado incidence and a dense concentration of population. However, some oddities have occurred. Mississippi with only 3.0 percent of the total tornadoes and a moderate population density has experienced the second greatest percentage 12.4 of the total tornado-related deaths. Oklahoma has the largest mean annual number of tornados per 10,000 square miles with 8.3.

DEATHS FROM TORNADOES, 1953-1973

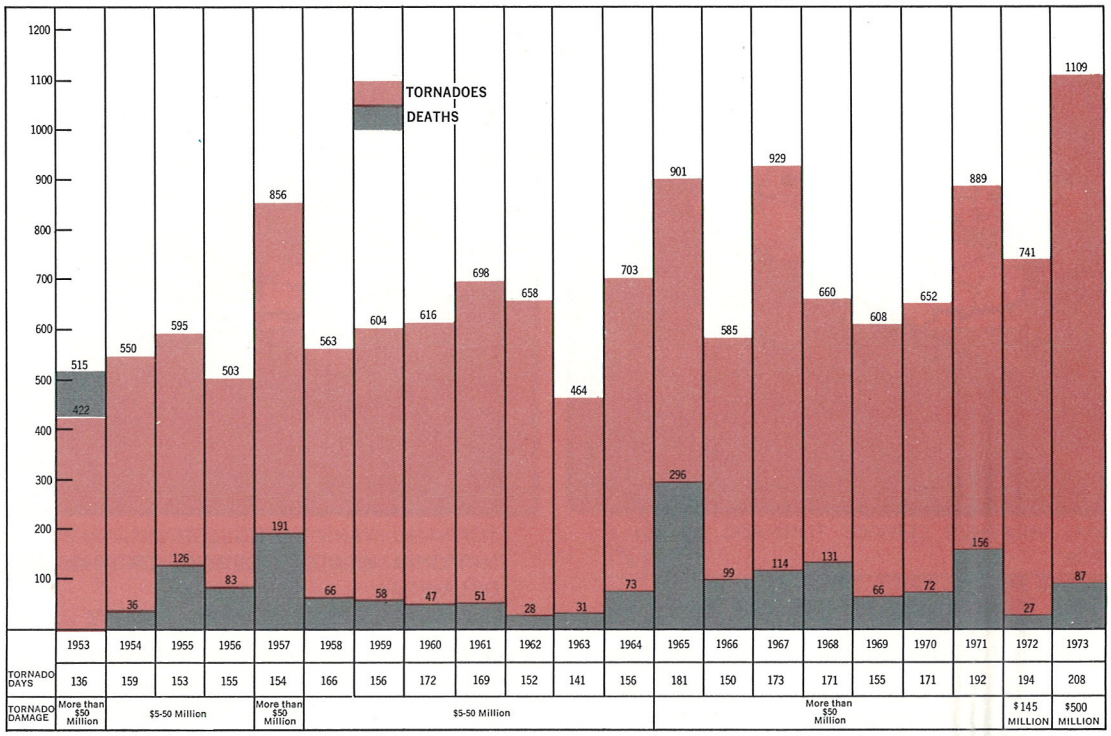


UPPER FIGURE IS NUMBER OF DEATHS
MIDDLE FIGURE IS MEAN ANNUAL NUMBER OF DEATHS
LOWER FIGURE IS % OF DEATHS

#—LESS THAN 0.1
* LESS THAN 1/10 OF 1%

TORNADO STATISTICS (1953-1973)

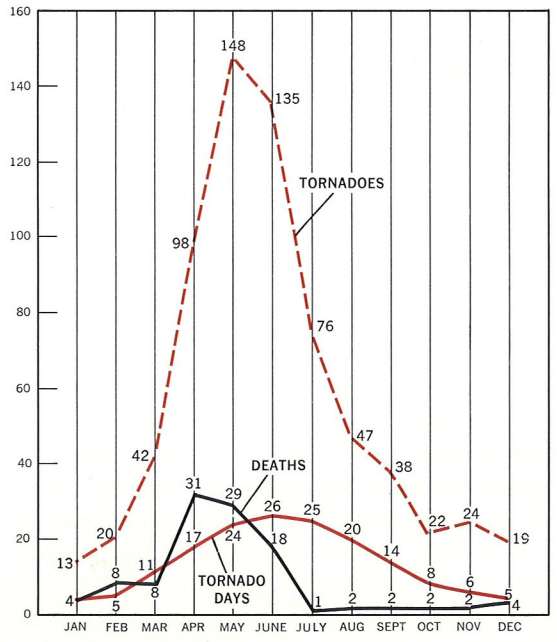
TORNADOES, DEATHS, TORNADO DAYS AND DAMAGE, 1953-1973



	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
TORNADO DAYS	136	159	153	155	154	166	156	172	169	152	141	156	181	150	173	171	155	171	192	194	208
TORNADO DAMAGE	More than $50 Million	$5-50 Million			More than $50 Million	$5-50 Million							More than $50 Million							$145 MILLION	$500 MILLION

From 1916 through 1952, fewer than 300 tornadoes were reported in any one year. In 1953, the first full year the present warning system was used, more than 422 tornadoes were observed and reported, beginning the first period of reliable statistical history. Since 1953, partly through improved equipment and techniques, partly through increasing public participation, essentially complete tornado records have been available. This publication summarizes tornado incidence for the period 1953-1973. Based on this period, the average annual number of tornadoes and tornado-related deaths is 681 and 112 respectively. The greatest in any one year occurred in 1973. During this year, 1109 tornadoes occurred on 208 days, killing 87 people, injuring 2481 others, and for the first time on record, caused property losses in excess of $500 million.

TORNADO INCIDENCE BY MONTH 1953-73



U.S. DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration/National Weather Service

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